AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1. – 4. (Canceled)

5. (Currently Amended) Apparatus for recording an image on a photosensitive surface, comprising:

a pulsed light source that produces pulsed light;

a data signal source that provides data signals;

a modulator that receives the pulsed light and the data signals and selectively modulates the pulsed light with a modulating signal responsive to the data signals at a data rate that is higher than a pulse repetition rate of the pulsed light; and

a scanner that scans the modulated pulsed light over the surface, said modulated pulsed light being delivered pulse by pulse to different spatially overlapping regions of the surface to build up a pixelized pattern.

6. (Original) Apparatus according to claim 5 wherein the pulsed light source is a line source and wherein the modulator spatially modulates the line.

7. (Original) Apparatus according to claim 6 wherein the modulator independently modulates different sections of the line at the data rate.

8. (Previously Presented) Apparatus according to claim 5 wherein the modulator is operative to provide modulation that is asynchronous with the pulses.

Claim 9. (Canceled)

10. (Original) Apparatus according to claim 5 wherein the modulated light scans over the surface in a first direction and wherein the surface moves in a direction perpendicular to the direction of scanning such that the surface is illuminated by a raster scan.

11. (Original) Apparatus according to claim 5 wherein the photosensitive surface is a photoresist.

12. (Original) Apparatus according to claim 5 wherein the pulsed light comprises a laser beam.

13. (Original) Apparatus according to claim 5 wherein the pulsed light is produced utilizing a pulsed light generator comprising:

a beam generator that produces an initial pulsed light beam having an initial pulse repetition rate; and

a pulse repetition rate multiplier, which receives the initial pulsed light beam and produces at least one pulsed light beam having a higher pulse repetition rate than the initial rate.

14. (Original) Apparatus according to claim 13 and including a second repetition rate multiplier that receives an output beam from the repetition rate multiplier and produces an output beam having a repetition rate higher than the repetition rate of the beam that it receives.

15. (Previously Presented) Apparatus according to claim 14 wherein the first repetition rate multiplier and the second multiplication rate multiplier each double the repetition rate.

16. (Previously Presented) Apparatus according to claim 13 wherein the higher pulse repetition rate is twice the initial pulse rate.

17. (Previously Presented) Apparatus according to claim 13 wherein the higher pulse repetition rate is three times the initial pulse rate.

18. (Previously Presented) Apparatus according to claim 13 wherein the higher pulse repetition rate is four times the initial pulse rate.

19. (Previously Presented) Apparatus according to claim 13 wherein the higher pulse repetition rate is greater than four times the initial pulse rate.

20. (Previously Presented) Apparatus according to claim 13 wherein the initial pulsed light beam is a laser beam.

21. (Previously Presented) Apparatus according to claim 20 wherein the beam generator comprises:

a pulsed laser operating at an initial laser frequency; and

a laser frequency converter that increases the laser frequency to produce the light beam.

22. (Original) Apparatus according to claim 21 wherein the pulsed laser comprises a mode locked laser.

23. (Original) Apparatus according to claim 21 wherein the pulsed laser is an infrared laser.

24. (Previously Presented) Apparatus according to claim 23, wherein the initial pulsed light beam is a UV laser beam.

25. (Original) Apparatus according to claim 23 wherein the power contained in the higher repetition rate pulses is substantially equal to the power of the initial pulsed light beam.

Claims 26. – 28. (Canceled)

29. (Currently Amended) A method for recording an image on a photosensitive surface, comprising:

providing pulsed light;

providing data signals;

selectively modulating the pulsed light with a modulating signal responsive to the data signals at a data rate that is higher than a pulse repetition rate of the pulsed light; and

scanning the modulated pulsed light over the surface to deliver the modulated pulsed light pulse by pulse to different spatially overlapping regions of the surface to build up a pixelized pattern, thereby recording an image.

30. (Previously Presented) A method according to claim 29 wherein the pulsed light is provided by a line source and wherein modulating comprises spatially modulating the line.

31. (Original) A method according to claim 30 wherein different sections of the line are independently modulated at the data rate.

32. (Previously Presented) A method according to claim 29 wherein the modulating is asynchronous with pulses of said pulsed light.

33. (Original) A method to claim 29 wherein the modulated light scans over the surface in a first direction and wherein the surface moves in a direction perpendicular to the direction of scanning such that the surface is illuminated by a raster scan.

34. (Original) A method according to claim 29 wherein the photosensitive surface is a photoresist.

35. (Original) A method according to claim 29 wherein the pulsed light comprises a laser beam.

36. (Original) A method according to claim 29 wherein providing the pulsed light comprises:

generating an initial pulsed beam having an initial pulse repetition rate; and

multiplying the initial pulse to produce at least one pulsed light beam having a higher pulse repetition rate that the initial rate.

37. (Original) A method according to claim 36 and including further multiplying the at least one pulsed light beam to produce an output beam having a repetition rate higher than the repetition rate of the at least one pulsed light beam.

38. (Original) A method according to claim 37 wherein multiplying and further multiplying each double the repetition rate.

39. (Previously Presented) A method according to claim 36 wherein the higher pulse repetition rate is twice the initial pulse rate.

40. (Previously Presented) A method according to claim 29 wherein the higher pulse repetition rate is three times the initial pulse rate.

41. (Previously Presented) A method according to claim 29 wherein the higher pulse repetition rate is four times the initial pulse rate.

42. (Previously Presented) A method according to claim 29 wherein the higher pulse repetition rate is greater than four times the initial pulse rate.

43. (Previously Presented) A method according to claim 29 wherein the initial pulsed light beam is a laser beam.

44. (Previously Presented) A method according to claim 43 wherein the providing pulsed light comprises:

providing a pulsed laser that produces initial laser pulses at an initial laser frequency; and

converting the laser frequency to a higher frequency to produce the light beam.

45. (Original) A method according to claim 43 wherein the pulsed laser comprises a mode locked laser.

46. (Original) A method according to claim 44 wherein the initial pulses are in the infra-red.

47. (Previously Presented) A method according to claim 29, wherein the initial pulsed light beam is a UV laser beam.

48. (Original) A method according to claim 29 wherein the power contained in the higher repetition rate pulses is substantially equal to the power of the initial pulsed light beam.

49. (Currently Amended) Apparatus for exposing a pattern on a photosensitive surface comprising:

a laser light source providing a beam formed of successive substantially instantaneous laser pulses separated by a time interval;

a data signal source that provides data signals;

a modulator that receives the beam and the data signals and selectively modulates the beam with a modulating signal responsive to the data signals for a time period longer than said

time interval, such that the modulating signal is operative to modulate at least two successive pulses; and

an optical subsystem that receives the modulated beam and projects an image of the modulator onto a photosensitive surface to expose a pattern thereon according to said modulating signal,

wherein the modulating signal is an acoustic wave and wherein an attribute of the modulating signal changes between at least ~~some of the~~ two successive pulses.

50. (Original) Apparatus according to claim 49 wherein the modulator is an acousto-optical modulator.

51. (Original) Apparatus according to claim 49 wherein the modulator has a defined length, and the attribute is the length of the acoustic wave in the modulator.

52. (Original) Apparatus according claim 51 and wherein the shape of a spot formed by a pulse in the beam, as projected by the optical subsystem, is at least partly defined by the length of the acoustic wave in the modulator.

53. (Original) Apparatus according to claim 51 and comprising a scanning subsystem for scanning the image of the modulator along the photosensitive surface.

54. (Original) Apparatus according to claim 53 wherein the acoustic wave propagates in the modulator at a first velocity having a first rate of propagation and a first direction, and the image of the modulator is scanned across the photosensitive surface at a velocity that is related to the velocity of propagation of the acoustic wave, but in the opposite direction.

Claims 55. - 60. (Canceled)

61. (previously presented) Apparatus for recording an image on a photosensitive surface, comprising:

a laser pulsed light source that produces pulsed light having a first wavelength in the IR spectrum and a pulse repetition rate;

a wavelength converter comprising an LBO crystal type non-linear medium external to the laser cavity of said laser pulsed light source that receives said pulsed light and outputs wavelength converted pulsed light having a second wavelength which is less than the first wavelength;

a multi-channel modulator that receives and modulates the wavelength converted pulsed light; and

a scanner that scans the modulated wavelength converted pulsed light over the surface.

Claims 62. – 65. (Canceled)

66. (Currently Amended) Apparatus according to claim ~~65–~~61 and wherein the wavelength converted pulsed light has a wavelength which is in the UV spectrum.

67. (Original) Apparatus according to claim 61 and wherein the wavelength converted pulsed light has a wavelength which is in the UV spectrum.

Claim 68. (Canceled)

69. (Previously Presented) Apparatus according to claim 61 and wherein the pulse repetition rate is less than a data rate at which said modulator modulates said pulsed light.

70. (Original) Apparatus according to claim 61 and wherein the pulse repetition rate is multiplied by a pulse repetition rate multiplier.

71. (Previously Presented) A method for recording an image on a photosensitive surface, comprising:

providing pulsed light as a beam having an initial pulse repetition rate;

multiplying the initial pulse repetition rate to produce at least one pulsed light beam having a higher pulse repetition rate than the initial pulse repetition rate;

providing data signals;

selectively modulating the pulsed light with a modulating signal responsive to the data signals at a data rate that is higher than a pulse repetition rate of the pulsed light; and

scanning the modulated pulsed light over the surface to record an image.